

Amendment and Response Under 37 C.F.R. § 1.116 - Expedited Examining Procedure
Serial No.: 10/050,639

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Filed: 15 January 2002

For: METHOD AND COMPOSITION FOR SELECTIVELY ETCHING AGAINST COBALT SILICIDE

portion of the metal nitride region at an etch rate in a range of about 50 Å/minute to about 250 Å/minute.

C1 51. (Once Amended) The method according to claim 46, wherein the mineral acid comprises at least one mineral acid selected from a group consisting of HCl, H₂SO₄, H₃PO₄, HNO₃, and dilute HF.

C2 53. (Once Amended) The method according to claim 46, wherein the solution comprises a ratio in a range of about 1:1:35 (mineral acid:peroxide:deionized water) to about 1:1:5 (mineral acid:peroxide:deionized water).

C3 55. (Once Amended) The method according to claim 46, wherein the solution comprises a ratio in a range of about 0.05:1:6 (mineral acid:peroxide:deionized water) to about 1:1:6 (mineral acid:peroxide:deionized water).

C4 76. (New) An etching method for use in integrated circuit fabrication, the method comprising:

providing a substrate assembly comprising a metal nitride region and a cobalt silicide region, wherein providing the substrate assembly comprises:

C5 forming a metal nitride layer; and

forming the cobalt silicide region on at least a first portion of the metal nitride layer; and

selectively etching a portion of the metal nitride region against the cobalt silicide region using a solution comprising a peroxide, wherein the solution etches the portion of the metal nitride region at an etch rate in a range of about 50 Å/minute to about 250 Å/minute.

77. (New) The method according to claim 76, wherein forming the cobalt silicide region on at least the first portion of the metal nitride layer further comprises:

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contacting a cobalt layer with a patterned silicon layer; and
siliciding the cobalt layer using the patterned silicon layer.

78. (New) The method according to claim 77, wherein contacting the cobalt layer with the patterned silicon layer further comprises:

forming the cobalt layer on the metal nitride layer;
forming a silicon layer on the cobalt layer; and
 patterning the silicon layer.

79. (New) The method according to claim 76, wherein the solution further comprises a mineral acid.

80. (New) The method according to claim 79, wherein the mineral acid comprises at least one mineral acid selected from a group consisting of HCl, H₂SO₄, H₃PO₄, HNO₃, and dilute HF.

81. (New) The method according to claim 80, wherein the mineral acid comprises HCl.

82. (New) The method according to claim 79, wherein the solution comprises a ratio in a range of about 1:1:35 (mineral acid:peroxide:deionized water) to about 1:1:5 (mineral acid:peroxide:deionized water).

83. (New) The method according to claim 82, wherein the solution comprises a ratio in a range of about 1:1:25 (mineral acid:peroxide:deionized water) to about 1:1:10 (mineral acid:peroxide:deionized water).

84. (New) The method according to claim 79, wherein the solution comprises a ratio in a range of about 0.05:1:6 (mineral acid:peroxide:deionized water) to about 1:1:6 (mineral acid:peroxide:deionized water).

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85. (New) The method according to claim 84, wherein the solution comprises a ratio in a range of about 0.1:1:6 (mineral acid:peroxide:deionized water) to about 0.5:1:6 (mineral acid:peroxide:deionized water).

86. (New) The method according to claim 76, wherein the peroxide comprises hydrogen peroxide.

87. (New) The method according to claim 76, wherein the solution comprises a ratio in a range of about 1:50 (peroxide:deionized water) to about 1:1 (peroxide:deionized water).

88. (New) The method according to claim 87, wherein the solution comprises a ratio in a range of about 1:10 (peroxide:deionized water) to about 1:5 (peroxide:deionized water).